Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Withdrawn) A method of ~~operating~~ controlling a blood pump, comprising:

sampling a time continuous signal from the blood pump;

transforming the sampled time continuous signal to the frequency domain;

analyzing the sampled time continuous signal in the frequency domain;

controlling the blood pump in response to the analysis of the sampled time continuous signal in the frequency domain; and

detecting excess suction in response to ~~the~~ analysis of distortion in the sampled time continuous signal in the frequency domain.

2. (Withdrawn) The method of claim 1, further comprising determining parametric data in response to the analysis of the sampled time continuous signal in the frequency domain.

3. (Withdrawn) The method of claim 2, wherein the parametric data include heart rate.

4. (Withdrawn) The method of claim 3, further comprising zero padding the time continuous signal.

5. (Withdrawn) The method of claim 4, wherein sampling the time continuous signal from the blood pump includes sampling less than about 200 data points of the time continuous signal.

6. (Withdrawn) The method of claim 5, further comprising zero padding at least about 3800 data points.

7. (Withdrawn) The method of claim 2, wherein the parametric data include respiratory rate.

8. (Withdrawn) The method of claim 2, wherein the parametric data include pump flow rate.

9. (Withdrawn) The method of claim 1, further comprising validating the sampled time continuous signal in response to the analysis of the sampled time continuous signal in the

frequency domain.

10. (Withdrawn) The method of claim 9, wherein validating the sampled time continuous signal includes evaluating the signal to noise ratio.

11. (Withdrawn) The method of claim 9, wherein validating the sampled time continuous signal includes evaluating the signal to noise plus distortion ratio.

12. (Withdrawn) The method of claim 1, wherein the time continuous signal comprises the pump flow rate.

13. (Withdrawn) The method of claim 1, wherein the time continuous signal comprises the pump speed.

14. (Withdrawn) The method of claim 1, wherein the time continuous signal comprises the pump current.

15. (Currently amended) A blood pump control system, comprising:

a processor ~~receiving~~ adapted to receive a time continuous signal from ~~the~~ a blood pump ~~system;~~ and

wherein the processor is ~~being~~ programmed to transform the time continuous signal to the frequency domain, ~~and control the blood pump~~ and to detect excess suction in response to distortion in the transformed time continuous signal ~~in the frequency domain~~.

16. (Currently amended) The system of claim 15, wherein the processor is further programmed to determine parametric data based on the ~~sampled~~ transformed time continuous signal ~~in the frequency domain~~, the processor including an output terminal for outputting the parametric data.

17. (Currently amended) The system of claim 15, wherein the processor is programmed to validate the ~~sampled~~ time continuous signal based on the ~~sampled~~ transformed time continuous signal ~~in the frequency domain~~.

18. (Currently amended) The system of claim 17, wherein the processor is programmed to calculate the signal to noise ratio of the transformed time continuous signal.

19. (Currently amended) The system of claim 17, wherein the processor is programmed to calculate the signal to noise plus distortion ratio of the transformed time continuous signal.

20. (Currently amended) The system of claim 15, ~~wherein the blood pump system includes a pump and~~further comprising a flow measurement device ~~measuring~~ adapted to transduce the pump flow rate, and wherein the processor is ~~connected to the flow measurement device~~adapted to receive a signal indicating the pump flow rate.

21. (Currently amended) The system of claim 15, ~~wherein the blood pump system includes a pump, and~~ wherein the processor is connected to the pump to receive a signal indicating the pump speed.

22. (Currently amended) The system of claim 15, ~~wherein the blood pump system includes a pump, and~~ wherein the processor is connected to the pump to receive a signal indicating the pump current.

23. (Currently amended) The system of claim 15, further comprising:

an analog to digital converter having a sampling rate and that ~~converts~~ digitizes at least a portion of the time continuous signal ~~to a digital signal~~; and

a sample mode selector connected to the analog to digital converter, the sample mode selector setting one of a synchronous sample mode or an asynchronous sample mode, wherein

if the asynchronous sample mode is set, the sampling rate of the analog to digital converter is set by a reference clock; and

if the synchronous sample mode is set, the sampling rate of the analog to digital converter is set according to the frequency of the time continuous signal.

24. (Currently amended) A blood pump system, comprising:

a blood pump ~~including a motor having~~comprising a rotor and a stator, the stator including a plurality of stator windings;

a ~~motor~~ controller operatively coupled to the ~~motor~~pump;

a processor ~~having inputs~~ operatively coupled to the ~~motor~~ controller and adapted to receive ~~for receiving~~ a time continuous signal from the pump; and

wherein the processor ~~being~~ is programmed to transform the time continuous signal to the frequency domain, and ~~control the pump and~~ to detect excess suction in response to distortion in the transformed time continuous signal~~, in the frequency domain~~.

25. (Currently amended) The blood pump system of claim 24, wherein the ~~motor~~ controller applies current to the stator windings in a sequence to create a rotating field, and wherein the time continuous signal includes ~~the~~ one or more stator winding current.

26. (Currently amended) The blood pump system of claim 24, further comprising a flow measurement device coupled to the processor ~~for~~ and providing a signal representing the pump flow rate, wherein the time continuous signal includes the pump flow rate.

27. (Currently amended) The blood pump system of claim 24, wherein the processor is programmed to zero pad a digital representation of the received time continuous signal.

28. (Currently amended) The blood pump system of claim 27, wherein the digital representation of the received time continuous signal from the blood pump comprises less than about 200 ~~sampled~~ data points of the time continuous signal.

29. (Original) The blood pump system of claim 28, wherein the processor is programmed to zero pad at least about 3800 data points.

30. (Withdrawn) A method of determining heart rate, comprising: sampling a time continuous signal from a blood pump at a predetermined sampling frequency for a predetermined time period to obtain a sample N; zero padding the sampled time continuous signal to achieve a sample M, where M is greater than N; transforming the zero padded time continuous signal to the frequency domain; and determining a heart rate based on the frequency domain representation.

31. (Withdrawn) The method of claim 30, wherein the frequency domain representation of the zero padded time continuous signal comprises a spectral peak at a frequency proportional to the heart rate.